CLAIMS:

1. A method for accomplishing state transitions in a configurable linear feedback shift register (LFSR) controlled by a clock (310), the length of the LFSR being represented by N, wherein a state vector (330) represents the state of the LFSR, an output (340) of the LFSR comprising W output symbols, W being at least two, and the output symbols being generated during one clock cycle, a state transition of the LFSR being accomplished during one clock cycle via multiplication of the state vector by a state transition matrix (350) to the power of W (multiple state transition matrix), characterized in that said multiple state transition matrix is decomposed in a first matrix (360) and a second matrix (370), the first matrix comprising at most $N + W + 1$ different expressions and the second matrix comprising at most $N + W + 1$ different expressions.

2. A method according to claim 1, wherein the expressions of the first matrix (360) are evaluated during a configuration stage of the operation of the LFSR.

3. A method according to claim 1, wherein the elements of the second matrix (370) are defined by

$$G_{ij} = \begin{cases} 1 & , \text{if } i - j = W \\ g_{i+j-N+1} & , \text{if } (i + j \geq N - 1) \wedge (j \geq N - W) \\ 0 & , \text{otherwise} \end{cases}$$

and the elements of the first matrix (360) are defined by

$$P_{ij} = \begin{cases} 1 & , \text{if } i = j \wedge i < N - W \\ p_{i+j-2N+W+1} & , \text{if } i + j \geq 2N - W - 1) \\ 0 & , \text{otherwise} \end{cases}$$

wherein $p_0 = 1$, $p_i = \sum_{j=0}^{i-1} g_{N-i+j} p_j$ for $0 < i < N$, and g_0, g_1 up to and including g_{N-1} represent the configuration symbols which are comprised in the state transition matrix (350).

4. A configurable linear feedback shift register (LFSR) controlled by a clock (310), the length of the LFSR being represented by N, a state vector (330) representing the state of the LFSR, the LFSR being arranged to generate an output (340) comprising W output symbols, W being at least two, to generate the output symbols during one clock cycle, the LFSR comprising multiplication means for accomplishing a state transition of the LFSR during one clock cycle via multiplication of the state vector by a state transition matrix (350) to the power of W (multiple state transition matrix), characterized in that said multiple state transition matrix is decomposed in a first matrix (360) and a second matrix (370), the first matrix comprising at most $N + W + 1$ different expressions and the second matrix comprising at most $N + W + 1$ different expressions.

5. A configurable linear feedback shift register (LFSR) according to claim 4, characterized in that the multiplication means comprises a first set (402) of logical units (408, 410) for performing the multiplication of the state vector (330) by the second matrix (370) and a second set (406) of logical units (416, 418) for performing the multiplication of the state vector by the first matrix (360).

6. A configurable linear feedback shift register (LFSR) according to claim 5, characterized in that the LFSR comprises a third set (404) of logical units (412, 414) for computing the first matrix (360).

7. A configurable linear feedback shift register (LFSR) according to claim 6, characterized in that the third set (404) of logical units (412, 414) is arranged to perform the computation of the first matrix (360) during a configuration stage of the operation of the LFSR.

8. A configurable linear feedback shift register (LFSR) according to claim 7, characterized in that the second set (406) of logical units (416, 418) is coupled to the first set (402) of logical units (408, 410) via an intermediate data register (710).